

IN THE TITLE:

Please amend the Title as follows:

“PROCESS FOR CREATING PHASE EDGE STRUCTURES IN A PHASE SHIFT
MASK”

IN THE SPECIFICATION:

Please amend paragraph [0019] as follows:

[0019] In FIGS. 2A-2B, which again are top and cross-sectional views (drawn along line X-X'), a mask 104 is patterned to protect one of the openings 100. The other opening 102 is then etched to create a recess in the transparent substrate 110. The mask is subsequently removed, as shown in FIGS. 3A-3B, and the separating portion of opaque material 106 is also removed (using a number of different methods such as additional masking and etching, etc.). This produces a larger opening (openings 100[[,] and 102 combined) that has a phase shift feature where light passing through portion 100 is shifted 180 degrees from the light passing through portion 102.

Please amend paragraph [0020] as follows:

[0020] This process shown in Figures 1A-3B involves a number of masking, patterning, photolithographic, etching, etc. techniques. The invention shown in Figures 4A-6B substantially simplifies the process to produce the same structure. As with previous drawings, Figures 4A-6A are top views and Figures 4B-6B are cross-sectional views drawn along line X-X'. As shown in Figures 4A and 4B, the invention performs a first patterning of the opaque layer 112 to expose a first region 114 of the transparent substrate 110. The invention then etches the first region 114 of the transparent substrate 110 through the opaque layer 112 to create a phase shift region within the transparent substrate 110, as shown in Figures 4A and 4B. Next, the invention performs additional

patterning of the opaque layer 112 to expose a second region 116 of the transparent substrate 110 that is adjacent (contiguous with) the first region 114 using any well-known mask 108 and material removal process, as shown in Figures 5A and 5B. This additional patterning process enlarges the opening 114[[,]] 446 formed in the first patterning process to add the second region 116. The mask is then removed as shown in Figures 6A and 6B.

Please amend paragraph [0023] as follows:

[0023] FIG. 8 shows the processing of the invention in flowchart form. More particularly, in item 800, the invention performs a first patterning of the opaque chrome layer to expose a first region of the transparent quartz substrate. In item 802, the invention etches the first region of the transparent quartz substrate through the chrome layer to create a phase shift region within the transparent quartz substrate. Next, the invention performs additional patterning of the opaque chrome layer to expose a second region of the transparent quartz substrate that is adjacent the first region ~~804~~, in item 804. This additional patterning process enlarges the opening formed in the first patterning process. The processing here is beneficial for a number of different reasons. In one example, the invention eliminates various levels of processing, and reduces the complexity of that processing. The fact that less lithographic levels are required immediately reduces the number of design levels (design complexity, data volume, etc.). Reduction in lithographic processing levels also reduces the process complexity, and length (i.e., yield, TAT, capacity, defects, raw process time (RPT)). With the invention,

the overlay requirements for each level also become less stringent, which improves yield, and TAT.

Please amend paragraph [0025] as follows:

[0025] Overlay requirements are relaxed with the invention because in the original method (illustrated in Figures 1A to 3B), the second level lithography process had to land on the opaque region (106) between the two clear openings ~~(112~~ 100 and 102, as shown in Figure 2B). However, in the second process of the embodiments of the invention (illustrated in Figures 4A to 5B), the second lithography process only has to hit the large opening (114 and 116 as shown in Figure 5B, which provides more room for error).